IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 21, Issue 2 Ser.5 (February. 2022), PP 68-72
www.iosrjournals.org

Observation on Early Oral Feeding After Gastrointestinal Surgeries: A Cohort Study

Dr Tharagan R[1] ; Dr Jitendra Kumar Choudhary[2]; Dr Sarvesh Kumar Dubey[3]; Dr Rajshekhar Sharma[4]

1&3 Junior Resident, RIMS, Ranchi ; 2. Senior Resident, RIMS,Ranchi ; 4. Professor ,RIMS, Ranchi.
Department of General Surgery, RIMS,Ranchi.

ABSTRACT
AIMS AND OBJECTIVES:
Poor nutrition after gastrointestinal surgery is a major problem in post operative care. Our study is aimed to investigate the efficacy of starting early oral feeding (EOF) after gastrointestinal surgeries.
METHODS :
A prospective cohort study was conducted in 120 patients who undergone elective gastrointestinal surgeries in the department of General surgery,RIMS , Ranchi from January 2021 to December 2021. 55 patients were assigned to early oral feeding group and 65 patients received late oral feeding(LOF). Post operative endpoint were compared between these groups
RESULTS:
No significant difference were found in the post operative complications (p>0.05)and tolerance to oral feed (p>0.05) between the two groups. The time to first passage of flatus and stool (p value <0.0001) and length of postoperative hospital stay (p<0.0001) were significantly lower in the EOF group compared to LOF group.
CONCLUSION:
Early oral feeding after gastrointestinal surgery is safe and tolerated by majority of patients
KEYWORDS:
Early oral feeding (EOF), Late oral feeding(LOF), Gastrointestinal surgeries, Postoperative complications

---

Date of Submission: 01-02-2022 Date of Acceptance: 13-02-2022

I. Introduction

Nutritional depletion has been demonstrated to be a major determinant of the development of postoperative complications[1]. Gastrointestinal(GI) surgery patients are at the risk of nutritional depletion from inadequate nutritional intake, surgical stress and subsequent increase in metabolic rate.

Studies have reported 40% of surgical and medical patients to be malnourished on admission to hospital. The majority of patients experienced nutritional depletion during the course of their hospital admission which was more severe in those patients who were already depleted at the time of their admission.

Patient with upper GI cancer often suffer from malnourishment[2-4]. Malignancy cases catabolic state,and interfere with appetite and eating habits.[4].

Despite the existence of a variety of nutritional support methods, enteral feeding provides the most physiologic route and at the same time avoids other complications and adverse events associated with parenteral feeding[1]

Traditionally, the postoperative management of patients undergoing GI surgery has been to keep them 'nil by mouth' and provide gastric decompression via a nasogastric tube (NGT) until the postoperative ileus resolves and bowel function resumes[5]. This management has been adopted over the years with the notion that restriction of oral feeding gives the GI tract more time to heal and recover, thus reducing postoperative complications like leakage and anastomotic rupture[5,6].

Contrary to the widespread belief, various studies have confirmed the safety and feasibility of early oral feeding (EOF)[7-12]. Hur et al conducted a randomized control study and concluded that EOF was feasible,and could result in shorter hospitalization and improvements in the quality of life of 54 patients receiving open gastrectomy[8]. Fannie et al's [9] pilot study and Suehiro T et al's[13] case control study revealed the EOF after gastrectomy is feasible,with no increase in morbidity. Liu et al [14] conducted a meta-analysis on patients who underwent distal gastrectomy also revealed EOF is feasible, safe and did not increase the incidence of postoperative complications or readmissions, and significantly reduced the length of hospital stay. Early oral nutrition is one of the most important elements of the enhanced recovery after surgery (ERAS) strategy after GI surgery[8,9].

II. AIMS AND OBJECTIVES

- To investigate the efficacy of starting early oral feeding (EOF) after gastrointestinal surgeries.
- To study the complications associated with early oral feeding.

III. PATIENTS AND METHODS

Study design:
This is a prospective cohort study
Sample size:
Number of patients included in this study - 120 patients
Type of patients:
Patient who undergone elective gastrointestinal surgery
Period of study :
January 2021 to December 2021
Place of study :
Department of General Surgery, Rajendra Institute of Medical sciences,Ranchi

INCLUSION CRITERIA :

- Patients aged between 18-65 years
- Patients who undergone elective gastrointestinal surgery
- Patient who are willing to give consent for the study

EXCLUSION CRITERIA

- Patients with severe cardiovascular disease, respiratory disease, hepatopathy, renal impairment,and abnormal nutritional status.
- Patients with metastatic disease or another type of cancer
- Patients with history of neoadjuvant chemo/radiotherapy.
- Patients who underwent emergency operation due to perforation or bleeding
- Patients with serious complications such as major bleeding occurring within 24hrs after surgery,which may affect oral feeding
- Patients with combined resection of other organs(except for gallbladder)or thoracotomy
- Age <18 years and >65 years.
- Covid 19 positive patients

Based on the inclusion and exclusion criteria 120 patients were included in the study and were divided into 2 groups-55 patients in Early oral feeding group and 65 patients in Late oral feeding group and were matched based on age sex and diagnosis.
The institutional ethics committee has approved the study protocol.

Peri operative Treatment:

Before surgery bowel was adequately prepared.General Anesthesia were given by a single team of anaesthetist. Surgeries were performed by experienced surgeons. All anastomosis were hand sewn in two layers with 3-0 vicryl in the inner layer and 3-0 silk in the outer layer. Prophylactic antibiotic cefaperazone+salbactum and metronidazole were administered intravenously 1 hour before surgery.A nasogastric tube and urinary catheter were routinely inserted in the operating room, and was removed on the morning of postoperative day (POD) 1. An abdominal drain was also routinely placed. Postoperative pain was managed by non- steroidal anti-inflammatory drugs (NSAIDs), but no epidural analgesia was given. All the patients were encouraged to start active ambulation from POD1. Patients in both the groups were discharged when, 1. No fever , 2. Passage of flatus and stool in the postoperative period, 3. Removal of abdominal drain, 4. No obvious symptoms like abdominal distention, nausea and vomiting, 5. Tolerance to oral feed for at least 24hrs.

Postoperative Feeding:

For patients in the EOF group, oral feeding was initiated by giving water on the POD 1. These patients were started on a clear liquid diet on the POD 2, which contained glucose, sodium chloride water, and enteral nutrient solution. From the POD 3 up to the day of discharge, patients were instructed to eat a liquid diet, and when they passed the flatus or bowel sounds appeared, soft diet was gradually given. The daily calorie requirements were met by supplementing with parenteral nutrition (1,200–1,400 kcal, 20–25 mL/kg/d). For patients who developed intractable nausea, vomiting, or distention, the diet was stopped, and a nasogastric tube was inserted.

For patients in the LOF group, oral feeding was started by giving water when the bowel sounds were audible, or with the passage of flatus. Prior to that, patients were maintained nil-by-mouth, and the daily calorie requirements were provided by parenteral nutrition. A clear liquid diet was given on the next day, and a soft diet

was gradually given when the liquid diet was well-tolerated. The diet was stopped and a nasogastric tube was inserted when patients complained of intractable nausea, vomiting, or abdominal distention.

We compared clinical outcomes of patients in the EOF group with patients of the traditional late oral feeding (LOF) group. Data regarding demographic and clinicopathologic characteristics of the patients were collected from patients' medical records.Duration of decompressing NG tube, time needed to initiate oral intake along with solid diet tolerance, time to pass flatus ,complications and duration of postoperative hospital stay were compared between the two groups.

Data were presented as mean ± standard deviation or number and percentage. Data were analyzed using SPSS Statistics (SPSS Statistics Inc., Chicago, US) version 23. The chi-square and Student's t-test for qualitative and quantitative normal variables, and Mann-Whitney U test for non-parametric continuous variables were applied, and the values were considered statistically significant at $p < 0.050$.

IV. Results :

A total of 120 patient included in the study .Among these patients, 55 patient(46%) was started with early oral feeding (EOF) and remaining 65 patients (54%) with late oral feeding. Both groups are well matched. No significant difference was present between the two groups in terms of age, gender , diagnosis and type of surgery.(Table no.: 1)

Table no.1 Demographic and clinical characteristics of patients

VARIABLES		EOF	LOF	p-value
Age (years)		56.2±10.2	57.1±9.8	0.623
Sex	Male	30(54.5%)	35(53.8%)	0.146
	Female	25(45.5%)	30(46.2%)	
Type of surgery				
Partial gastrectomy		13	15	0.596
Total gastrectomy		2	2	
Resection and anastomosis of small bowel		2	3	
Ileostomy closure		25	28	
Ileotransverse colon Anastomosis		6	8	
Hepaticojejunostomy		3	4	
Duodenal perforation repair during cholecystectomy		1	1	
Colocolic anastomosis		3	4	
Total		55	65	

TOLERANCE TO ORAL FEEDING :

In our study as shown in Table no.:2, 3(5.43%) and 2(3.26%) patients had nausea or vomiting in EOF and LOF groups respectively (p=0.516). 4 (7.27%)patients in EOF group and 2(3.62%) in LOF group had abdominal distention (p=0.293).The tolerance of oral feeding is 87.27% in EOF group and 93.12% in LOF group (p=0.213). All 3 are statistically not significant hence both groups had equal tolerance to oral feeding.

Table no: 2 Comparison of tolerance to oral feeding between EOF and LOF

Symptoms	EOF	LOF	p-value
Nausea or vomiting	3(5.43%)	2(3.26%)	0.516
Abdominal distention	4(7.27%)	2(3.62%)	0.293
Tolerance to oral feeding	48(87.27%)	61(93.84%)	0.213

POSTOPERATIVE RECOVERY OUTCOME :(Table no. 3)

Time to passage of flatus was 2.8±1.0 and 4.1±0.8 days in EOF and LOF group respectively,which occurred significantly earlier in the EOF group ($p<0.001$). The NG tube removed after 2.2±1.6 and 5.5±2.1 days in EOF and LOF group respectively, EOF group had earlier removal of NG tube($p<0.001$).The soft diet was started significantly earlier($p<0.001$) in EOF group (4.5±1.6days) than in LOF group (7.2±2.1days). The average length of postoperative hospital stay is significantly ($p<0.001$)lower in EOF group (7.2±2.6 days) than

in LOF group (9.8±3.2 days).

Table no.: 3 Comparison of postoperative recovery outcome between EOF and LOF

OUTCOMES	EOF(days)	LOF(days)	p-value
Time to passage of 1st flatus	**2.8±1.0**	**4.1±0.8**	**<0.001**
Time to NG tube removal	**2.2±1.6**	**5.5±2.1**	**<0.001**
Time to start soft diet	**4.5±1.6**	**7.2±2.1**	**<0.001**
Length of postoperative Hospital stay	**7.2±2.6**	**9.8±3.2**	**<0.001**

POSTOPERATIVE COMPLICATIONS:

Table 4 presents the incidence of each complication in both groups. In EOF group 9((16.4%) patients and in LOF group 11(16.9%) patients developed postoperative complications. The incidence of postoperative complications is equal in both groups and although relative risk is < 1, it is not statistically significant (p>0.005). The most common complication is Anastomotic leak in both group ,2 patients(3.6%) in EOF group and 5 patients (7.69%) in LOF group.There is no statistical significance regarding different types of postoperative complications (p>0.005). Reoperation were performed in 2 (3.6%) in EOF group and 3(4.6%) patients in LOF group and was not statistically significant (p>0.005). No 30 days mortality occurred in either of the groups.

Table no. 4 Comparison of Postoperative complications between EOF and LOF

COMPLICATIONS	EOF	LOF	p-value	RELATIVE RISK
All postoperative complications	**9**(16.4%)	**11**(16.9%)	**0.869**	**0.966**
Anastamosis leakage	**2**(3.6%)	**5**(7.69%)	**0.579**	**0.472**
Peritonitis	**1**(1.81%)	**2**(3%)	**0.883**	**0.59**
Wound infection	**1**(1.81%)	**1**(1.5%)	**0.550**	**1.18**
Wound dehiscence	**1**(1.81%)	**2**(3%)	**0.883**	**0.59**
Ileus	**2**(3.6%)	**2**(3%)	**0.733**	**1.18**
Reoperation	**2**(3.6%)	**3**(4.6%)	**0.848**	**0.78**
Rehospitalisation	**9**(16.4%)	**11**(16.9%)	**0.869**	**0.966**
30days Mortality Rate	**0**	**0**		**0**

V. Discussion:

Gastrointestinal surgeries are routinely done in all hospitals and one of the main factor that predict the outcome and recovery of the patients is nutrition. There are various route to give required nutrition to be patient but the most efficient,feasible and cost effective method is enteral nutrition. However EOF has not become a common practice since is safety is not documented by sufficient evidence[1,8,15-18]

Hur and colleagues[15] conducted a pilot study and studied the safety and surgical outcomes of starting EOF on the second postoperative day followed by a soft diet regimen on the third day in 35 patients undergoing curative surgical resection for distal gastric tumors and compared it with 31 patients receiving a conventional diet schedule as the control group. The authors found that the duration of hospitalization was shorter in the EOF group compared to the control group. Moreover, lymphocyte count recovered faster in the EOF group than in the control group. Two years later, Hur et al[8] showed again that EOF after surgery for gastric cancer was feasible and could result in shorter hospitalization and improve several aspects of patients postoperative quality of life. In their randomized control trial, enrolling 58 patients with gastric cancer, the duration of hospitalization and time to the first flatus along with the quality of life scores for fatigue, nausea and vomiting decreased significantly following the surgery in the EOF group compared to the control group. There was not such a significant difference observed between the two groups in terms of morbidity, costs of hospitalization, and postoperative pain or complications.

Other studies assessing EOF following colorectal procedures are also in favor of this component of fast track program.[1,19] Kawamura et al,[19]proposed appetite as a reliable indicator for starting postoperative oral feeding in patients with elective colon cancer surgery while El Nakeeb and colleagues[1] focused on the duration of the operation and amount of blood loss as a determinant of oral feeding tolerability in candidates of colonic anastomosis.

In the present study, it was found that EOF after elective gastrointestinal surgeries significantly enhanced the recovery of bowel function (P < 0.0001) and decreased the length of hospital stay (P < 0.0001) without increasing the risk of postoperative complications and mortality. Although a lower occurrence of postoperative complications was observed in the EOF group, the difference was not statistically significant (P > 0.05), which

implies that EOF is a safe option after elective gastrointestinal surgeries.Hence, it was considered that EOF not only provides nutritional support, but also accelerates the recovery of gastrointestinal function through food stimulation, thereby reducing surgical complications.

Our study had few limitations like small sample size , non-randomization and considered all gastrointestinal surgeries. To over come these shortcomings further randomized control study has to be done.

VI. Conclusion:

Early oral feeding is safe , feasible, well tolerated and is a physiology stimulant for the bowel and would resolve postoperative ileus. Patient will be ambulated and discharged earlier.. Thus EOF is safe in patients undergoing elective gastrointestinal surgeries and results in early recovery and discharge.

Author contributions

Dr Tharagan R—Main author data collection, Analysis, Manuscript writing and editing and Reference managing.

Dr Jitendra Kumar Choudhary —Data collection, Manuscript writing and Analysis.

Dr Sarvesh — Data collection, Manuscript writing and Analysis.

Prof Dr R.S.Sharma -Main author data collection. Analysis, Manuscript proof reading and correction.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

Informed Consent: Taken

Bibliography

[1]. El Nakeeb A, Fikry A, El Metwally T, Fouda E, Youssef M, Ghazy H, et al. Early oral feeding in patients undergoing elective colonic anastomosis. Int J Surg 2009 Jun;7(3):206- 209.

[2]. Hill GL, Blackett RL, Pickford I, Burkinshaw L, Young GA, Warren JV, et al. Malnutrition in surgical patients. An unrecognised problem. Lancet 1977 Mar;1(8013):689- 692.

[3]. Tian J, Chen JS. Nutritional status and quality of life of the gastric cancer patients in Changle County of China. World J Gastroenterol 2005 Mar;11(11):1582-1586.

[4]. Attar A, Malka D, Sabaté JM, Bonnetain F, Lecomte T, Aparicio T, et al. Malnutrition is high and underestimated during chemotherapy in gastrointestinal cancer: an AGEO prospective cross-sectional multicenter study. Nutr Cancer 2012;64(4):535-542.

[5]. Bisgaard T, Kehlet H: Early oral feeding after 12 elective abdominal surgery – what are the issues? Nutrition 2002;18:944–948.

[6]. Nelson R, Edwards S, Tse B: Prophylactic na- sogastric decompression after abdominal surgery. Cochrane Database Syst Rev 2007: 13 CD004929.

[7]. Bowling TE. Does disorder of gastrointestinal motility affect food intake in the post-surgical patient? Proc Nutr Soc. (1994) 53:151–7. doi: 10.1079/PNS19940018

[8]. Hur H, Kim SG, Shim JH, Song KY, Kim W, Park CH, et al. Effect of early oral feeding after gastric cancer surgery: a result of randomized clinical trial. Surgery. (2011) 149:561–8. doi: 10.1016/j.surg.2010.10.003

[9]. Fanaie SA, Ziaee SA. Safety of early oral feeding after gastrointestinal anastomosis: a randomized clinical trial. Indian J Surg. (2005) 67:185–8. Available online at: http://hdl.handle.net/1807/6325

[10]. Lassen K, Kjaeve J, Fetveit T, Trano G, Sigurdsson HK, Horn A, et al. Allowing normal food at will after major upper gastrointestinal surgery does not increase morbidity: a randomized multicenter trial. Ann Surg. (2008) 247:721–9. doi: 10.1097/SLA.0b013e31815cca68

[11]. Lewis SJ, Andersen HK, Thomas S. Early enteral nutrition within 24h of intestinal surgery versus later commencement of feeding: a systematic review and meta-analysis. J Gastrointest Surg. (2009) 13:569–75. doi: 10.1007/s11605-008-0592-x

[12]. Osland E, Yunus RM, Khan S, Memon MA. Early versus traditional postoperative feeding in patients undergoing resectional gastrointestinal surgery: a meta-analysis. JPEN J Parenter Enteral Nutr. (2011) 35:473–87. doi: 10.1177/0148607110385698

[13]. Suehiro T, Matsumata T, Shikada Y, Sugimachi K. Accelerated rehabilitation with early postoperative oral feeding following gastrectomy. Hepatogastroenterology. (2004) 51:1852–5.

[14]. Liu X, Wang D, Zheng L, Mou T, Liu H, Li G. Is early oral feeding after gastric cancer surgery feasible? A systematic review and meta- analysis of randomized controlled trials. PLoS ONE. (2014) 9:e112062. doi: 10.1371/journal.pone.0112062

[15]. Hur H, Si Y, Kang WK, Kim W, Jeon HM. Effects of early oral feeding on surgical outcomes and recovery after curative surgery for gastric cancer: pilot study results. World J Surg 2009 Jul;33(7):1454-1458.

[16]. Osland EJ, Memon MA. Early postoperative feeding in resectional gastrointestinal surgical cancer patients. World J Gastrointest Oncol 2010 Apr;2(4):187-191.

[17]. Hu Y, Ma Y, Wang J, Zhu ZH. Early enteral infusion of traditional Chinese medicine preparation can effectively promote the recovery of gastrointestinal function after esophageal cancer surgery. J Thorac Dis 2011 Dec;3(4):249-254.

[18]. Andersen HK, Lewis SJ, Thomas S. Early enteral nutrition within 24h of colorectal surgery versus later commencement of feeding for postoperative complications. Cochrane Database Syst Rev 2006;(4):CD004080.

[19]. Kawamura YJ, Kuwahara Y, Mizokami K, Sasaki J, Tan KY, Tsujinaka S, et al. Patient's appetite is a good indicator for postoperative feeding: a proposal for individualized postoperative feeding after surgery for colon cancer. Int J Colorectal Dis 2010 Feb;25(2):239-243.